TDA1175P

LOW-NOISE VERTICAL DEFLECTION SYSTEM

FEATURES SUMMARY

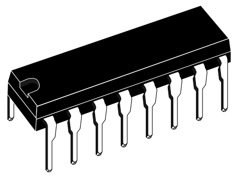
- COMPLETE VERTICAL DEFLECTION SYSTEM
- LOW NOISE
- SUITABLE FOR HIGH DEFINITION MONITORS
- ESD PROTECTED

DESCRIPTION

The TDA1175P is a monolithic integrated circuit in POWERDIP16 plastic package. It is intended for use in black and white and colour TV receivers. Low-noise makes this device particularly suitable for use in monitors.

The functions incorporated are: synchronization circuit, oscillator and ramp generator, high power gain amplifier, flyback generator, voltage regulator.

Figure 1. Package



POWERDIP16
(Plastic Package)

Figure 2. Pin Connections

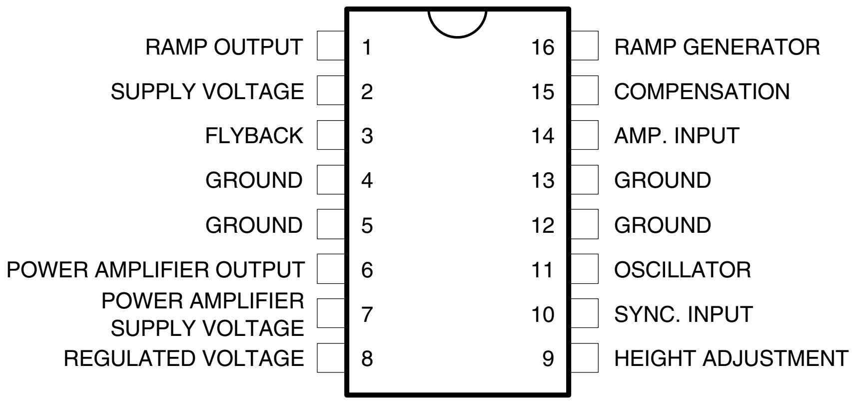


Figure 3. Block Diagram

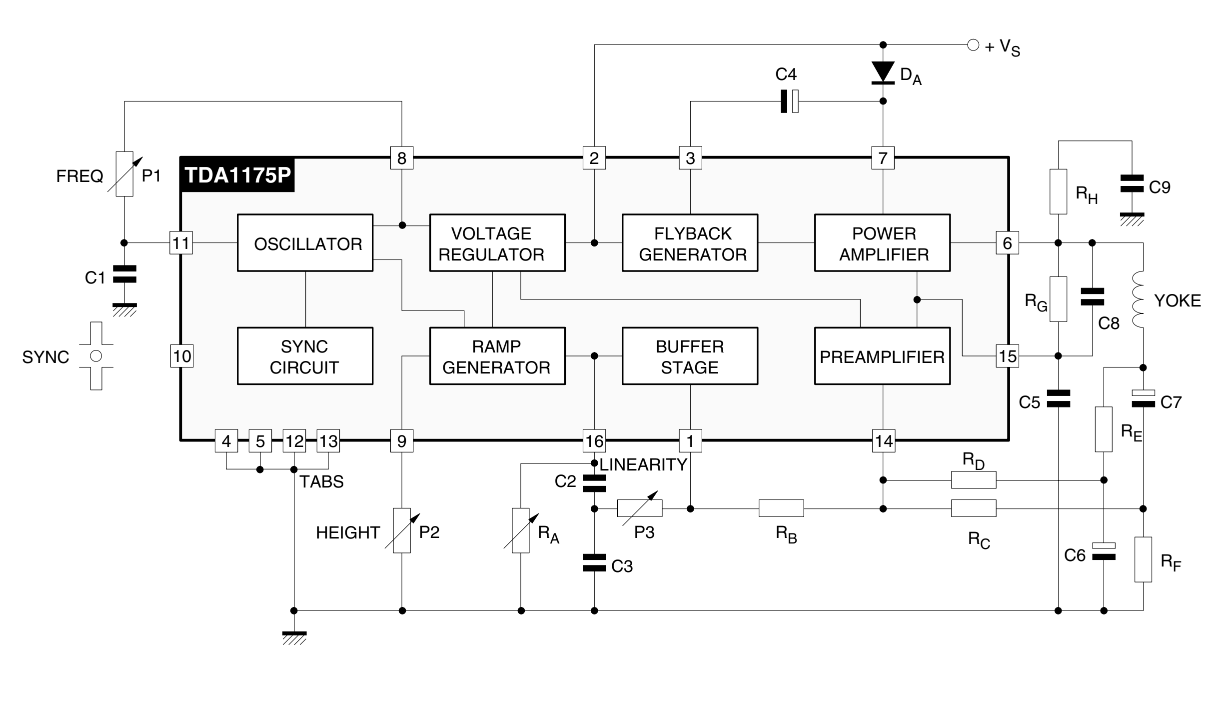


Table 1. Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_S	Supply Voltage at Pin 2	35	V
V_6, V_7	Flyback Peak Voltage	60	V
V_{14}	Power Amplifier Input Voltage	+ 10 – 0.5	V
I_O	Output Peak Current (non repetitive) at t = 2ms	2	A
I_O	Output Peak Current at f = 50Hz, t ≤ 10µs	2.5	A
I_O	Output Peak Current at f = 50Hz, t > 10µs	1.5	A
I_3	Pin 3 DC Current at $V_6 < V_2$	100	mA
I_3	Pin 3 Peak to Peak Flyback Current for f = 50Hz, $t_{fly} \leq$ 1.5ms	1.8	A
I_{10}	Pin 10 Current	± 20	mA
P_{TOT}	Power Dissipation at at T_{tab} = 90°C	4.3	W
	Power Dissipation at T_{amb} = 70°C (free air) (1)	1	W
T_{STG} , T_j	Storage and Junction Temperature	– 40 to 150	°C

Table 2. Thermal Data

Symbol	Parameter	Value	Unit
$R_{th\ (j\text{-}tab)}$	Thermal Resistance Junction-pin Max.	12	°C/W
$R_{th\ (j\text{-}amb)}$	Thermal Resistance Junction-ambient Max.	80	°C/W(1)

Note: 1. Obtained with tabs soldered to printed circuit with minimized copper area.

ELECTRICAL CHARACTERISTICS

(T_{amb} = 25°C, unless otherwise specified)

Table 3. DC CHARACTERISTICS

(Refer to the test circuits, VS = 35V)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	Fig.
I_2	Pin 2 Quiescent Current	$I_3 = 0$		7	14	mA	5
I7	Pin 7 Quiescent Current	$I_6 = 0$		8	17	mA	5
$-I_{11}$	Oscillator Bias Current	$V_{11} = 1V$		0.1	1	μA	4
$-I_{14}$	Amplifier Input Bias Current	$V_{14} = 1V$		1	10	μA	5
$-I_{16}$	Ramp Generator Bias Current	$V_{16} = 0$		0.02	0.3	μA	4
$-I_{16}$	Ramp Generator Current	$I_9 = 20\mu A$, $V_{16} = 0$	18.5	20	21.5	μA	5
$\frac{\Delta I_{16}}{I_{16}}$	Ramp Generator Non-linearity	ΔV_{16} = 0 to 12V, $I_9 = 20\mu A$		0.2	1	%	5
V_S	Supply Voltage Range		10		35	V	
V_1	Pin 1 Saturation Voltage to Ground	$I_1 = 1mA$		1	14	V	
V_3	Pin 3 Saturation Voltage to Ground	$I_3 = 10mA$		1.5	2.5	V	4
V_6	Qiuescent output Voltage	$V_s = 10V$, R1 = 1kΩ, R2 = 1kΩ	4.1	4.4	4.7	V	4
		$V_s = 35V$, R1 = 3kΩ, R2 = 1kΩ	8.2	8.8	9.4	V	4
V_{6L}	Output Saturation Voltage to Ground	$-I_6 = 0.1A$		0.9	1.2	V	6
		$-I_6 = 0.8A$		1.8	2.2	V	6
V_{6H}	Output Saturation Voltage to Supply	$I_6 = 0.1A$		1.4	2.1	V	7
		$I_6 = 0.8A$		2.8	3.1	V	7
V_8	Regulated Voltage at Pin 8		6.5	6.7	6.9	V	5
V_9	Regulated Voltage at Pin 9	$I_9 = 20\mu A$	6.6	6.8	7	V	5
$\frac{\lvert\Delta V_8\rvert}{\Delta V_S}$ $\frac{\lvert\Delta V_9\rvert}{\Delta V_S}$	Regulated Voltage Drift with Supply Voltage	ΔVs = 10 to 35V		1	2	mV/V	5
V_{14}	Amplifier Input Reference Voltage	$V_{10} \leq 0.4V$	2.20	2.27	2.35	V	

Table 4. AC CHARACTERISTICS
(Refer to the AC test circuit, V_S = 22V, f = 50Hz)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	Fig.
I_S	Supply Current	$I_Y = 1_{APP}$		140		mA	8
I10	Sync. Input Current (positive or negative)		0.5		2	mA	8
V_6	Flyback Voltage	$I_Y = 1_{APP}$		45		V	8
t_{fly}	Flyback Time	$I_Y = 1_{APP}$		0.7		ms	8
V_{ON}	Peak to Peak Output Noise	Pin 11 Connected to GND		18	30	mV_{pp}	8
f_O	Free Running Frequency	(P1 + R1) = 300kΩ C9 = 0.1 µF	36	43.5		Hz	8
f_{OPER}	Operating Frequency Range		10		120	Hz	8
Δf	Synchronization Range	I_{10} = 0.5mA, C9 = 0.1µF (P1+R1) = 300kΩ	14			Hz	8
$\frac{\Delta f}{\Delta V_S}$	Frequency Drift with Supply Voltage	V_S = 10 to 35V		0.00 5		Hz/V	8
$\frac{\lvert\Delta f\rvert}{\Delta T_{ab}}$	Frequency Drift with tab Temperature	T_{tab} = 40 to 120°C		0.01		Hz/°C	8

DC TEST CIRCUITS

Figure 4.

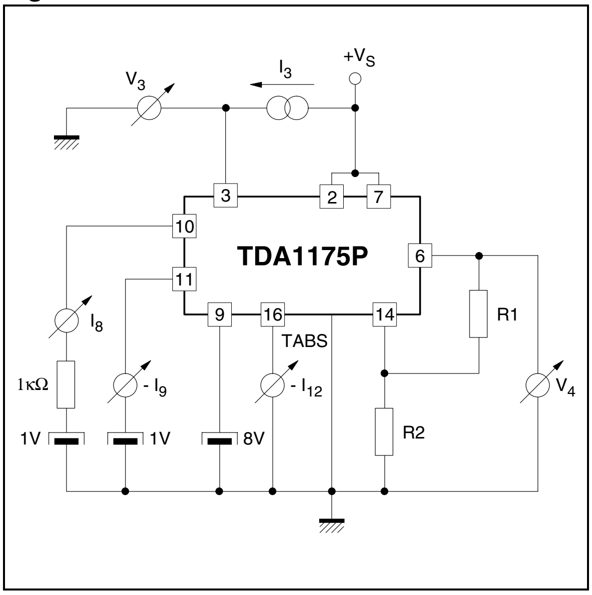


Figure 6.

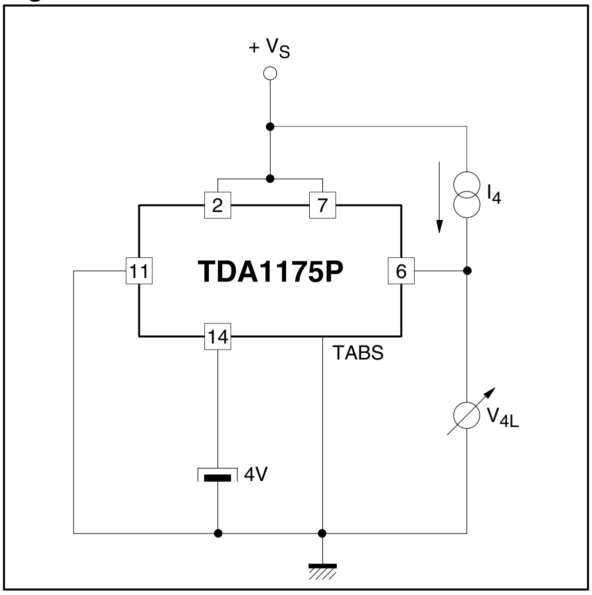


Figure 5.

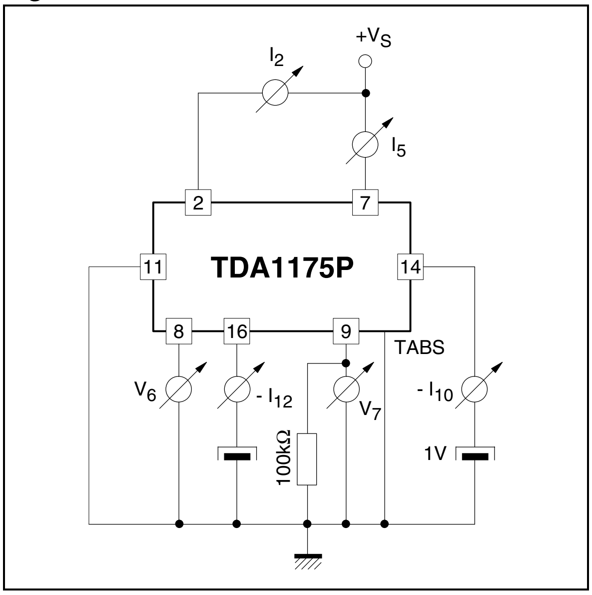


Figure 7.

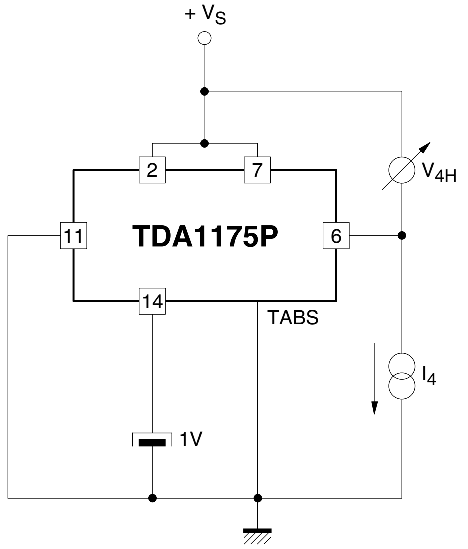


Figure 8. AC Test and Application Circuit for Large Screen B/W TV Set 10Ω/20mH/1A$_{PP}$

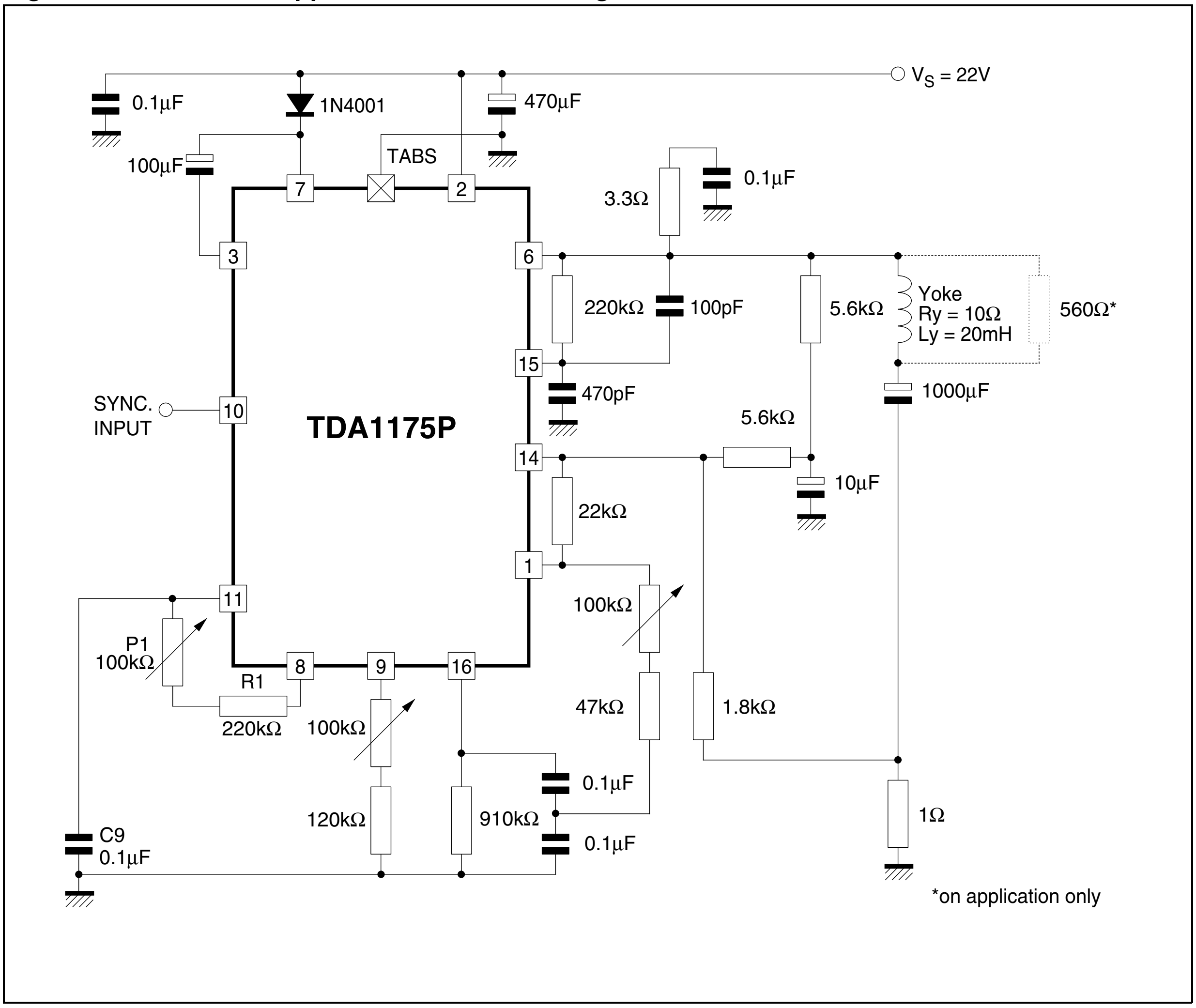
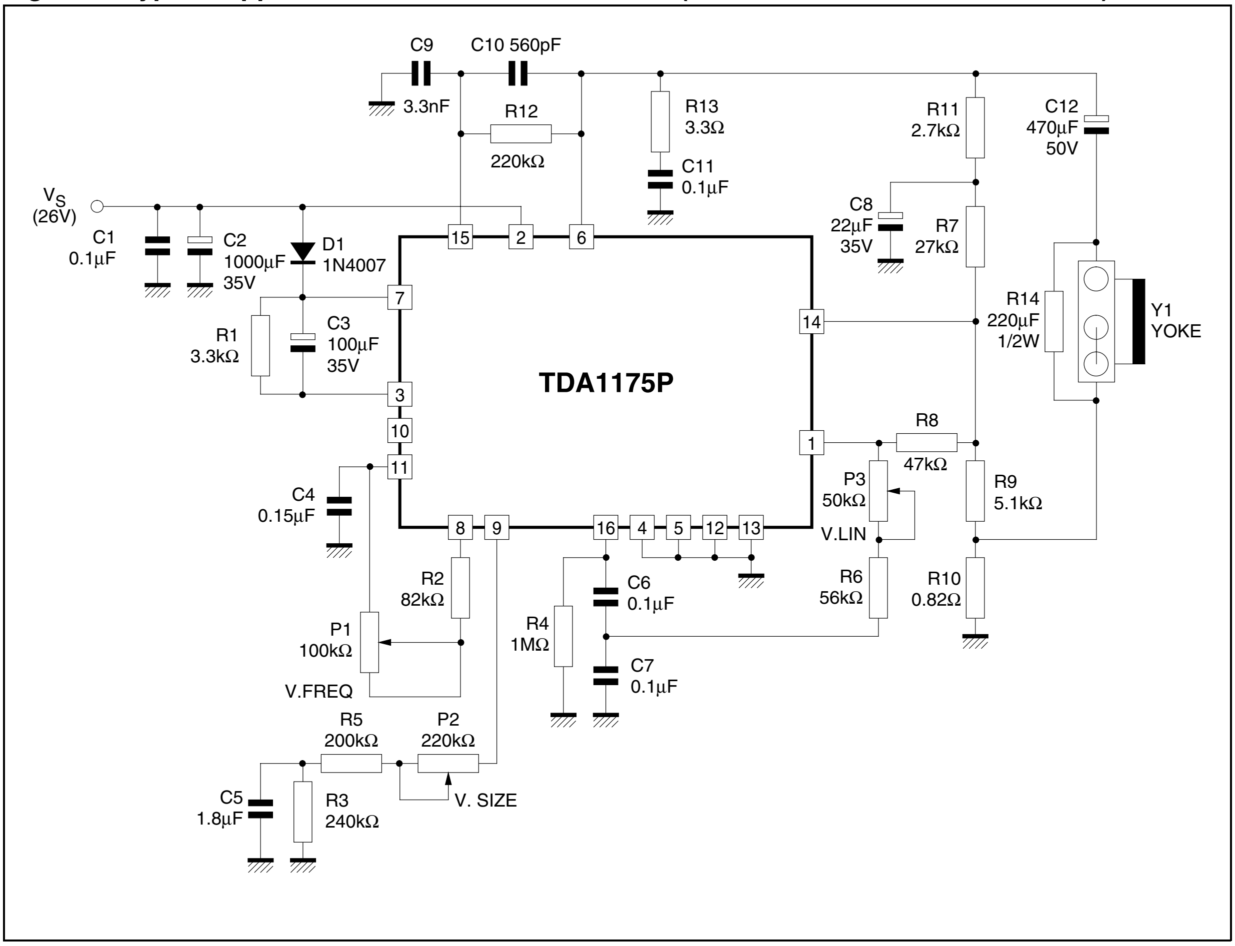


Figure 9. Typical Application Circuit for VGA Monitor ($R_Y = 10\Omega$, $L_Y = 20mH$, $I_Y = 0.8A_{PP}$)



[redacted]

Figure 14. Maximu[redacted]

[redacted]e 12. External Heatsink Mounting
[redacted]ble

[redacted]

PART NUMBERING

Table 6. Order Codes

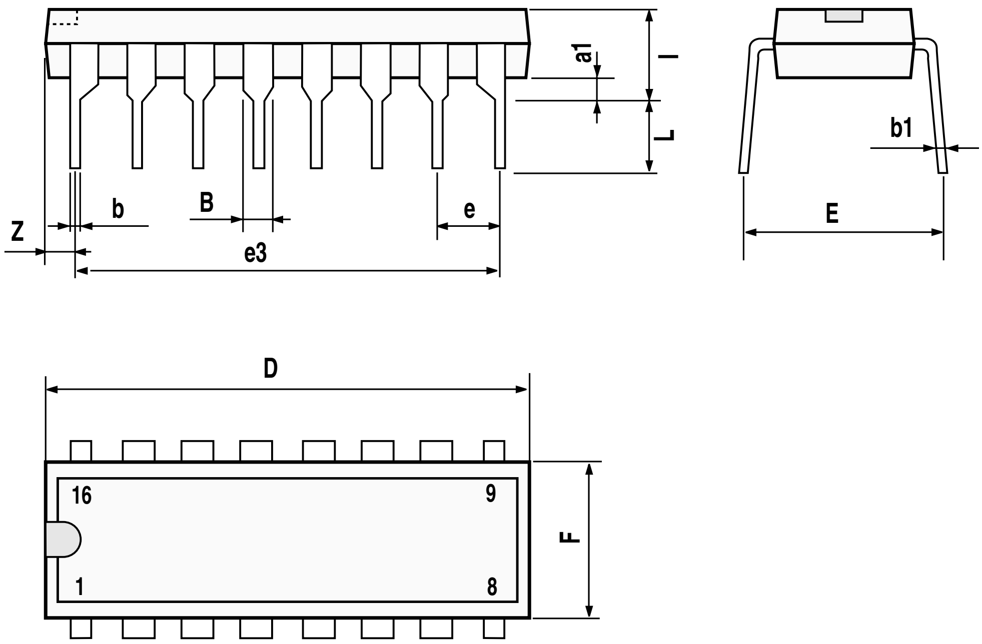
Part Number	Package	Temperature Range
TDA1175P	POWERDIP16	-25 to 85 °C

PACKAGE MECHANICAL

Table 7. POWERDIP16 - Mechanical Data

Symbol	millimeters			inches		
	Typ	Min	Max	Typ	Min	Max
a1	0.51			0.020		
B	0.85		1.4	0.033		0.055
b		0.5			0.020	
b1	0.38		0.5	0.015		0.020
D			20			0.787
E		8.8			0.346	
e		2.54			0.100	
e3		17.78			0.700	
F			7.1			0.280
i			5.1			0.201
L		3.3			0.130	
Z			1.27			0.050

Figure 15. POWERDIP16 - Package Dimensions



Note: Drawing is not to scale